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A MONTHLY JOURNAL OF

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THE AMERICAN PRACTITIONER.

SEPTEMBER, 1870.

Certainly it is excellent discipline for an author to feel that he must say all he has to say in the fewest possible words, or his reader is sure to skip them; and in the plainest possible words, or his reader will certainly misunderstand them. Generally, also, a downright fact may be told in a plain way; and we want downright facts at present more than anything else.—RUSKIN.

Original Communications.

ON THE SAFETY OF CHLOROFORM IN LABOR.

BY LUNSFORD P. YANDELL, M. D.

Anæsthetic medicine has been created since physicians who are still young entered their profession, and yet in these few years it has come to form an important department of therapeutics. A brief review of the steps by which it has suddenly attained such development can hardly prove uninteresting to any medical reader. As has so often been the case with discoveries before, this, which undoubtedly ranks among the most remarkable in medicine, was foretold many years before it came to light. Our countryman Rush, toward the close of the last century, declared that in his opinion pain was not a necessary accompaniment of child-bearing. He was convinced that it might be greatly alleviated by blood-letting, and he looked forward to the discovery of a remedy which should suspend sensibility, and thereby destroy labor pains altogether, without impairing the expulsive efforts of the uterus. And this prediction is entitled to the respect

due to a scientific deduction, for it was founded upon facts. Rush had known an instance in which a woman, in a fit of drunkenness, gave birth to a child unconsciously, and without any recollection of pain; and a medical friend had informed him of a case in which a child was born under similar circumstances—the mother being in a fit of epilepsy.

About the time that Rush was publishing these prophecies in America, Beddoes was engaged in England with researches concerning the effect of gases upon pulmonary consumption. Humphrey Davy had just entered his pneumatic institution at Bristol, and engaged with zeal in the investigation. He made trial of the respirability of numerous gases, in the course of which he was near losing his valuable life by suffocation. Among others he inhaled the nitrous oxide gas, and became aware of its wonderful properties, which he published to the world in the year 1800. The exhilarating gas became thus at once an object of curious interest, and was inhaled by students in all the chemical laboratories of the world. No evil effects from it were recorded, but it was only inspired to the point of producing a transient ebriety, and never so far as to induce insensibility. In time it was discovered that the vapor of sulphuric ether inhaled brought about similar results; and, being more easily procured than the laughing-gas, it was breathed by great numbers of people for amusement, but not always without leaving unpleasant effects, more or less permanent, upon the brain.

While these experiments upon the nervous system with vapors and gases were going on, animal magnetism began again to attract attention. It was claimed by those who were experimenting with it that it had the power not only of exalting and perverting the senses, but of entirely annulling sensibility. Severe surgical operations, it was asserted, had been performed upon persons under its influence without any consciousness of pain. The statement was received with great incredulity by most scientific men, and perhaps by a

majority of physicians it was wholly discredited; but the evidence upon which it rests is altogether too conclusive to admit a doubt of its truth. In that condition of the brain which has been variously termed by different writers the "biologized" or the "hypnotic" state, it can not be doubted that sensibility is suspended. It is a condition which can not be established in a large majority of persons, but when fully induced its subjects unquestionably exhibit a strange insensibility to external impressions. And the verification of this physiological fact was an important step in the progress of anæsthetics: for now two material truths had been ascertained; first, that vapors and gases might be inhaled with the effect of suddenly and powerfully rousing the nervous system; and secondly, that the nervous system might with safety be brought into a condition in which it took no cognizance of painful impressions.

At length, on the 10th of December, 1844, when the search after a reliable anæsthetic was at its keenest, and mesmerism seemed about to become respectable by showing how, at least in some instances, we might annihilate pain, Dr. Wells, of Hartford, Connecticut, had a tooth extracted without pain under the nitrous oxide. This was the first case in which the gas was proved to have the power of annulling sensibility. After having established its anæsthetic power, to a limited extent, by experiments with it upon others, Dr. Wells proceeded to Boston to publish his discovery; but the gas-bag having been removed too soon, his demonstration failed, and it has been said that he was hooted by the spectators of his experiment. Nevertheless he had hit upon an anæsthetic, and must always rank among those to whom the world is indebted for this great boon. Dr. Morton, his former pupil and partner, was present at his mortifying exhibition, and taking up the search at once was rewarded by a discovery the truth of which he soon demonstrated. On the 30th of September, 1846, he extracted a tooth without pain while the subject

of the operation was under sulphuric ether. The novel procedure was repeated again and again, and uniformly with the same satisfactory results. Operations were performed by surgeons at the Massachusetts General Hospital, as well as in private practice, soon after these facts became known, and sulphuric ether proved itself an effectual anæsthetic. A thrifty Bostonian sought to make the discovery profitable by vending this fluid under the name of "letheon," with a bottle expressly devised for its inhalation.

The fame of such a discovery as this was not long spreading abroad. In a few weeks after its announcement in Boston the vapor of sulphuric ether was administered to patients in the London hospitals about to undergo surgical operations, and in a little while gained a currency there much greater than it had attained at home. Liston was one of the first London surgeons to make trial of the vapor, and he announced its triumph with enthusiasm. His joy at the discovery of an agent which enabled him to perform his operations without pain was unbounded; nor did he hesitate to avow that it was increased by the fact that he foresaw in it the discomfiture and overthrow of mesmerism.

In January, 1847, and the following spring months, the first experiments with ether were made in midwifery; and the credit of this application is due to the late lamented Simpson. Dubois, in Paris, pursued quickly in his footsteps, and probably without knowing that the great Scotch accoucheur was engaged in the investigation. Both were in haste to communicate the results of their experience to the world; and they were followed by Dr. Channing, of Boston, not many months afterward, who bore the same favorable testimony to the value of the anæsthetic in cases of labor. At last, on the 15th of November, 1847, it was ascertained by Sir James Y. Simpson that chloroform, which had been or many years known to chemists, was capable of producing all the effects of sulphuric ether upon the animal system, and

that it induced them more speedily and when inhaled in less quantity. The new agent swiftly superseded sulphuric ether, and in a little while became the anæsthetic of the world; though Boston generally clings to the ether, and a few practitioners elsewhere still profess to regard it as safer than chloroform.

A few weeks after the discovery of the new anæsthetic was announced by Sir James Y. Simpson, a notice of it was sent to the Western Journal of Medicine by its foreign correspondent, Dr. D. W. Yandell, then in Paris, and very soon afterward it was introduced into Louisville. I prepared an impure fluid in the laboratory of the University of Louisville, and inhaled the vapor, being perhaps the first person in this city to experiment with it. It was not long getting into the hands of our surgeons and accoucheurs; but two parties existing in the profession here, as is usual, the fact that it was adopted by one seemed to be a sufficient reason why it should be rejected by the other, and anæsthetics for a time encountered strenuous opposition. At the end of their second year, in fact, so powerful was the evidence which the enemy had been able to collect against them that one of the most spirited of their writers boldly proclaimed in the public prints, "Etherization is on its last legs."

How vain is human prophecy! How short the distance penetrated by the most sagacious into the future! What does this writer himself now probably think of his bold prediction? "Etherization on its last legs?" Nay, if the profession had become convinced that its dangers were far greater than they are admitted to be, and that anæsthetics ought to be abandoned altogether, what would be the prospect of bringing our patients to this belief? But this brings me to one of the gravest questions connected with my subject — the actual danger of anæsthetics.

No one would be bold enough to deny that this is real. The inhalation of ether was followed before a great while by

deaths, and these were rapidly multiplied after the introduction of chloroform. They have become very numerous. It is the opinion of some observers that they are even on the increase; but facts do not bear out this conclusion. At Boston, where sulphuric ether started, there are physicians so apprehensive of the perils of chloroform that they would have its use prohibited by law. Physicians elsewhere have expressed the opinion that so great a mortality as has attended it would have led to the rejection of any other article of the materia medica. Writers have been laboring on the mortuary statistics of etherization with a view to determine the rate of mortality. The highest set down is about one in two thousand. By others it is placed at one in three thousand five hundred. Dr. Snow collected the history of four thousand cases in which chloroform was administered without a single death; and in eight London hospitals it was given seventeen thousand times before a fatal case occurred. But in the very same hospitals afterward six deaths attended its administration in seven thousand five hundred cases. In the hospitals of England eleven deaths resulted from its use in thirty-five thousand one hundred and sixty-two cases. While in one hospital it was given fifteen hundred and seventy-five times without a death, in another, where it was handled with the same care, it was given only five hundred and twenty-five times before a death resulted. That the casualties attending chloroform very far exceed those from sulphuric ether is what would be expected from its almost universal administration, even if it were not a more powerful agent. But deaths enough have been caused by ether to show that it is by no means devoid of danger.

Can the danger from anæsthetics be foreseen and obviated? It would save many lives if there were conditions of the system which could be recognized as incompatible with their safe employment; but unfortunately, after more than twenty years' experience, we can not lay claim to any

such knowledge. We do not with certainty know any state of the economy which would justify us in saying, with confidence beforehand, that the inhalation of one of these vapors would or would not be attended with hazard. Dr. Benjamin W. Richardson thinks the risk is increased in subjects "with a weakened and dilated right side of the heart," indicated by "enlarged hemorrhoidal veins, varicose veins of the lower extremities, and large, full, yet not tense veins of the other parts of the body." In one such case he declined to give chloroform, and the patient died under it in the hands of another physician. But while we may admit the value of this criterion when found, we can not shut our eyes to the fact that persons of the stoutest bodies and apparently in the most perfect health have sometimes been killed by it, at the same time that it has been administered with safety to the subjects of almost all forms of disease.

The fatal issue in such cases has been ascribed to a full stomach, but certainly on very insufficient grounds. It is desirable that the stomach should be empty when one is about to inhale chloroform; but there is nothing to justify the supposition that carelessness in that respect has added materially, if at all, to the deaths chargeable to anæsthetics. The manner of administering them was at one time deemed a matter of great importance, and instruments were contrived by which the quantity given might be accurately regulated; but all these have been laid aside as valueless, and only the simplest methods now obtain. The aim of the operator is to bring the patient under the influence, which he is to do cautiously, watching the state of the pulse and breathing till the effect is induced. Deaths from anæsthetics have not borne any steady proportion to the mode of administration. As many have occurred with instruments as when the fluid was simply poured upon a napkin; and it is the opinion of many that the danger is even increased by the more complicated methods.

Idiosyncrasy has been called in to account for the inexplicable deaths that have occasionally taken place under anæsthetics. Inexplicable some of these unquestionably are in the present state of our knowledge. Some have taken place suddenly, after a few inspirations. Of the fifty fatal cases collected by Dr. Snow death occurred in nine within a minute after the first inhalation, and in four of the cases within a few seconds; and this can not be attributed to idiosyncrasy, for some of the victims had previously inhaled chloroform with impunity. These sudden deaths have been plausibly ascribed to spasm of the air-passages, arresting respiration, and with it the circulation of the blood.

Posture perhaps has had more to do with the fatal results of anæsthesia than any other circumstance, if we leave out of view that unknown peculiarity of system which in some instances renders it wholly intolerant of the narcotic vapor; but, though this may have occasionally determined the unfortunate issue, it can not by any means be held responsible for most of the casualties. It may explain, in part, why the deaths in trivial operations have been out of proportion to those which have attended the great operations of the surgeon, and why a much larger number proportionally have occurred in dentistry than in surgery. But enough patients have died in the recumbent position to show that we can not look to posture alone for safety.

To sum up, it may be said that the subjects that have died of anæsthetics embrace both sexes, and young and most healthy persons as well as old; that death has overtaken them in all postures, after exceedingly minute quantities as well as when the system was saturated by the vapor; on a full and on an empty stomach; and from sulphuric ether as well as from chloroform administered by all possible methods. But of all their victims not one, it is believed, has been a parturient woman. This of all the facts in the history of anæsthesia is the most remarkable, and to my mind far the

most interesting. People have died inhaling chloroform for amusement, and for the relief of trivial pain. They have died in the dentist's chair, and on the surgeon's table; but no woman in labor is known to have died from any anæsthetic.

In a few months after the discovery of sulphuric ether as an anæsthetic was made known, it was introduced into obstetrical practice, and chloroform followed it in less than a year. They have been in very extensive use in all parts of the civilized world for now more than twenty-two years, and in that time not a single death in midwifery has been recorded from either in any medical print. It is not to be believed that one such death has taken place, for if it had it is hardly possible that it could have been concealed. This extraordinary result may be due in part to the posture in which anæsthetics are taken by women in labor—the one of all others most favorable to their safe administration. It is no doubt largely due to the slow and cautious manner in which the patients are brought under their influence, there being in these cases no temptation to haste, and the feelings of the patient being taken somewhat as a guide. Generally too the impression sought to be produced is not so profound. But all these circumstances hardly explain the unvarying safety with which they have been used for so long a time in midwifery, and we are left to conclude that there may be something in the process of parturition itself which reconciles the system to their admission. Anyhow, whether we are able to explain this exemption from danger in such cases or not, the fact takes away all excuse for refusing them to this large class of sufferers; and that is the point of the present article.

A strange prejudice has prevailed in this country against the employment of anæsthetics in midwifery. It is by no means the common practice of the country yet to administer them. Among my medical friends in this city a distrust in regard to them is still felt, which I have been surprised to discover. Many of them have assured me that they resort

to them with "a wholesome dread," and others decline to use them altogether.

Now, if they have been extensively employed for more than twenty-two years by practitioners all over the world, without a single casualty in child-birth, while we should not be justified from this success in asserting that they are unattended by danger, we are obliged to admit that the danger is reduced by it to the minimum. In all this time, if any but the most trifling risk attended the practice, some unfortunate constitution must have been encountered in which death would have followed it. Such being its safety then, ought not the practice to become universal? Such is my conviction. We have no right as a profession, according to my views of duty, to withhold from the suffering such an antidote to pain. It is not in this way that we act in other cases. We prescribe for headache, for colic, and for numberless other affections, self-limited in their nature, simply to relieve the pain. But in none of them is the distress greater than it is in labor. Indeed, if we may take the testimony of those who endure it, that which is experienced by women in travail often amounts to torture. It was in the hope that my experience might avail something toward the removal of an unfounded prejudice against chloroform, and thereby save lying-in women a vast amount of unnecessary suffering, that I set about this paper.

From the first, I have been in the habit of administering chloroform in every case of labor in which my patient was inclined to its use. Not unfrequently the pains have been too slight or the labor too soon over to require it; but in slow cases I have often urged reluctant women to take it under the persuasion that it would accelerate the process. My observation has been that it destroys sensibility without affecting irritability, to use Rush's language, and that the contractions continue unimpaired, while the patient is unconscious of pain. I am not sure that I ever saw the expulsive efforts diminished by it, and am quite certain that I never saw them arrested by

the largest doses. We know how liable labor-pains are to intermit, and I can not help thinking that the abatement complained of by practitioners as sometimes resulting from chloroform has been due to some other cause.

Having given it in all cases where desired by the patient, it follows that I have not had much regard to the state of her health; and the fact is that I ask no questions about the condition of the brain, heart, or lungs, the organs supposed to be especially endangered by it. In those dilatations of the heart referred to by Dr. Richardson, it might be hazardous to inhale it, though even then I should not hesitate to administer it to a woman in a difficult labor.

When I began to use it I was more cautious in its administration than I am now, and seldom pushed it so far as to destroy sensibility and consciousness. It was felt by the patient to be a vast relief to have the pains so far blunted that, though conscious of their presence, she could endure them with patience. But with longer practice I have come to feel greater security in its employment, and now often see it inhaled until my patients are wholly insensible of pain and unconscious of the birth of the child. It is not a rare occurrence for the mother to wake up and inquire, "Whose baby is that I hear crying?"

This statement is not made to recommend the practice. There is no reason why the anæsthesia should be rendered so perfect; but the facts stated show that even this prodigal use of the anæsthetic is not attended by any bad effects.

I give chloroform always. It is claimed for sulphuric ether that it is safer; but an agent which has been so long and so largely in use as chloroform, without doing mischief in such cases, ought, one would think, to be deemed safe enough. The inhalation of ether is disagreeable; its effects are slower than those of chloroform, and a larger quantity is required to produce the desired effect. These objections have prevailed against the single advantage of greater safety, and caused

it to be deliberately laid aside in nearly every part of the world.

It is my practice to withhold the anæsthetic until labor has reached the second stage of Denman, the pain up to that point in most cases not being sufficiently acute to demand it; but when the suffering is severe I can see no good reason why it should not be permitted at an earlier stage. Chloroform may be inhaled for a great length of time without injury. I once saw the inhalations kept up for nearly three weeks without intermission, in a tetanoid case, and the patient recovered fully, experiencing no bad effects from the long-continued action of the remedy. But it is as labor approaches its termination that the agent exerts its happiest influence, annihilating the pain when it is most insupportable, and at the same time assisting in the process by relaxing the muscles of the perineum.

Most women experience some irritation on attempting to inspire the vapor for the first time, and are apt to put the napkin aside. This delay causes the narcotic impression to be made slowly, and adds to the safety of the operation, obviating among other dangers that of spasm of the air-passages, which is believed to have been the cause of death in some instances in which it occurred quickly after a few forced inspirations. In midwifery there is ample time for inducing anæsthesia in the most gradual manner, and we act wisely in being guided by the sensations of our patients. Giving it at the recurrence of the pains, and then laying it aside in the intervals, the blood becomes slowly saturated with the vapor; and if any latent trouble should be lurking in the system, this method of feeling our way would be likely to develop it in time to guard against it.

It has been alleged by some practitioners that the tendency to hemorrhage is increased by chloroform, and that they have found cases of asphyxia in the child more frequent since its introduction. I can only say that such has not been my

experience. Post partum hemorrhage, to a serious extent, continues to be a rare accident in my practice after anæsthetic inhalation, as it was in the old days before this "meddlesome midwifery" was adopted; and as to the still-born, I am sure that I have not found the number greater than it was when mothers were left to bring forth their children in unalleviated "sorrow." So far from encompassing the lying-in chamber with additional perils, I have thought that women made quicker and better recoveries after taking chloroform; that they are brighter for escaping the pangs of child-birth, and rally sooner. It so happens that since this practice was instituted I have met with just three cases of puerperal convulsions, and that they were all in patients of other physicians, and all in women who had not inhaled chloroform. It would be very hasty certainly to conclude from these instances that this frightful disease may be warded off by anæsthetics; but the coincidence, to say the least of it, is noteworthy, and the more because of the well-known power of chloroform over convulsive affections. If convulsions supervene in labor we hasten to administer chloroform. We resort to this remedy at once in the convulsions of children. Why may it not tend to prevent them in parturient women by its soothing influence upon the nervous centers?

But it was no part of my design in this article to enter into speculative discussions, and it is time it was brought to a close. To those who, like the writer, have had long and favorable experience with chloroform—in whose hands, as in his, it has proved in midwifery an unmixed blessing—the present will appear an unnecessary labor. But to the young practitioner, who has not yet fully made up his mind as to its safety, and resorts to it still with misgivings, this testimony can hardly be unacceptable; and with that large and influential class of doubters who reject it altogether, or give it only at the urgent solicitation of their patients, it is hoped it will have some convincing force. I can not help thinking that it

is time this distrust of chloroform in obstetric practice had ceased, seeing it has not a particle of evidence to justify it; and I hold that we sin against our profession as well as humanity when we decline to apply so safe a remedy for tortures which their subjects have sometimes compared to "the torments of hell." I confess that when I have heard women under the anæsthetic reproaching former medical attendants with cowardice for refusing them this solace in their anguish, I have felt that their reproaches were just. It ought, in my opinion, to be laid down as an axiom in obstetrics that every case of painful labor is a case for chloroform.

LOUISVILLE.

A CASE OF TETANUS TREATED BY CALABAR BEAN AND HYDRATE OF CHLORAL.

BY PRESTON PETER, M. D.

On the 4th of March last, P. C., aged thirty years, thrust a nail into the left foot, about one inch in depth, and near the center of the plantar surface. An anodyne lotion locally, with a little morphine internally, soon gave relief; the wound suppurated and healed in the course of ten days, and he went to work again. Experiencing some stiffness of his limbs, he quit work at the end of the first day.

March 18th, fourteen days after the injury, I saw the patient at ten A. M., and found him complaining of stiff legs, shoulders, neck, and jaws; he could open his mouth only wide enough to admit the tip of his tongue, which was heavily furred, and red around the edges; pulse eighty; skin feverish; bowels confined. Ordered a full dose of blue mass, with extract of hyoscyamus, to be followed by sulphate of

magnesia; and, after the bowels are moved, a half grain of morphia, to be taken every two hours until quiet or asleep.

19th, nine A. M. The patient had rested well through the night, and slept from midnight till day; bowels had acted well; but the other symptoms were unchanged, except stiffness had increased, and there was slight opisthotonus. Ordered a half grain of the extract of Calabar bean to be given internally every three hours, which was kept up through the day, with the effect of producing slight nausea and vomiting and active purging, but no perceptible contraction of the pupils. At eight o'clock P. M., directed thirty grains of hydrate of chloral every half hour till asleep.

20th, eight A. M. All the above symptoms continued without material change; had slept three or four hours in the latter part of the night; did not get full doses of the chloral; Calabar bean continued as before. The purging continuing, gave a grain of opium every two hours to control it, which two doses sufficed to do. In the afternoon I noticed slight twitching of the muscles, when I directed the Calabar bean to be given every two hours, and the chloral in thirty-grain doses as before.

21st, eight A. M. Patient had slept part of the night, at short intervals; pulse eighty to ninety, and a little irregular; nausea and vomiting had ceased, but tetanic symptoms were plainly on the increase. Continued extract of the bean in half-grain doses, every two hours, with partial muscular relaxation but no contraction of the pupils. At eight P. M., symptoms of convulsions being present, ordered a preparation of the bean for hypodermic use. On returning at ten o'clock found the friends of the patient had interfered and the medicine had not been obtained. I contented myself for the night with the internal use of the bean, increased to a grain every two hours, and continued the chloral.

22d, eight A. M. Patient had a restless night, with little sleep, and that interrupted. At half past nine o'clock A. M.,

got the following preparation: Extract of Calabar bean, six grains; bicarbonate of potash, one grain; distilled water, one drachm. Mix and filter. (Ten minims represent one grain.) Of this solution I injected five drops into the arm. In twenty minutes it had produced marked relaxation of all the muscles, and the patient could for the first time freely protrude his tongue; there was slight contraction of the pupils. In three hours all the symptoms had returned. I now injected three fourths of a grain with the same strikingly good result which had followed the first injection; and as the effects of the medicine seemed to last but about two hours and a half, the injections were repeated, increasing one fourth of a grain of the bean with each successive one, until ten P. M., when the quantity used had reached two grains at a dose. The system was now fully relaxed. Up to this time the relaxation was marked, and spasms had been fully controlled, but it was not until the bean had been given in a two-grain dose that the relaxation of all the muscles involved was complete.

23d. Was called up at four A. M. Patient suffered more severely from muscular contractions; he had gone six hours without an injection, but had taken two or three doses of the bean internally without effect. At four A. M., injected a grain and a half, with prompt relief, but without thoroughly relaxing muscular contraction; the opisthotonus particularly remained. The injections were kept up through the day, at intervals of two and a half to three hours, with from one to one grain and a half at each injection, and with about the same effect as the day before; the opisthotonus was perceptibly diminished, and the patient always expressed himself as greatly relieved in from fifteen to twenty minutes after each injection; could open his mouth fully an inch, and took fluid food, in the form of beef-tea, gruel, and milk-punch, without difficulty. At nine P. M., injected one and three fourth grains of the bean, and directed it to be followed by fifty grains of chloral

every half hour till he slept. He took two doses of the latter without any appreciable benefit, more than to produce a sort of dreamy state, and refused any more.

24th. Was called up at five A. M., and found patient had suffered severely since one A. M. with muscular contractions or jerkings, of which he had a great number in the latter part of the night; he was much exhausted. An injection of twenty drops of the solution gave almost immediate relief. Spasms returned in about three hours; a repetition of the injection was again successful. The injections were continued through the day at intervals of about three hours, the quantity of the solution used being gradually increased until thirty drops were given, when relaxation was again complete, save a very slight opisthotonus. I remained with the patient all night, repeating the injection at regular intervals.

Early in the morning of the 25th the opisthotonus had pretty well disappeared, there was freer motion of the neck, and the trismus did not occur even when the spasms would return; the whole muscular system was more generally relaxed. The patient took soup, beef-tea, gruel, milk-punch, etc., well in the latter part of the night, and as freely as was desired. About six A. M., his pulse rose from one hundred and twenty to one hundred and forty, and became irregular; the pupils grew much contracted; and the spasms recurred with greater violence, sometimes threatening to overwhelm the patient. By ten A. M., the pulse grew more quiet, and fell occasionally to ninety, but more frequently it beat one hundred and twenty; bowels again became loose, and once or twice during the morning moved involuntarily. The patient having had no real sleep for three days and nights, I determined to take advantage of the relaxation which followed an injection of thirty drops of the solution, and administer chloroform. In fifteen minutes after he began the anæsthetic he fell asleep, and with an occasional inhalation slept well for two hours; when he awoke he showed symptoms

of spasm. An injection of ten drops and a repetition of the chloroform secured two other hours of quiet sleep. The injections, of the strength of a grain to a grain and a half of the bean, were continued at regular intervals until midnight. They exerted almost complete control over the entire muscular system. The patient took his food and stimulants without difficulty. Soon after twelve o'clock he began to sink, and died from exhaustion at six A. M. of the 26th, eight days after tetanus set in. He had neither spasms nor contractions of any of the muscles for six or eight hours before death.

I think it not improbable that had the Calabar bean been resorted to at an earlier period of the attack, the final result of the case might have been different.

LOUISVILLE.

A CASE OF TETANUS TREATED BY CALABAR BEAN.

BY EDWARD RICHARDSON, M. D.

John M., a robust man, aged thirty-one years, was run over by a street-car, on the 3d of December, 1869, receiving the following injuries: a lacerated wound, between three and four inches in length, on the outer aspect of the left knee-joint; also a lacerated wound on the inside of the left calf, of about the same dimensions, with a considerable contusion of the limb.

On the night of the 13th, ten days after the injury, I was asked by my student, Mr. Henry Cochran, under whose care the patient had been placed, to see him, as he had suspicious symptoms. I found the patient complaining of some stiffness about the jaws and wakefulness. The wounds were in every

respect looking as well as could be desired; pulse was one hundred and six; temperature one hundred and four degrees; body covered with perspiration. Gave a quarter grain of morphia hypodermically.

December 14th. Patient slept well during the night; little or no stiffness about the jaws; opened his mouth without difficulty; appetite good; pulse one hundred and six; otherwise as at last visit. Eight P. M.: increased stiffness about the jaws; more restless and anxious: injected a third of a grain of morphia subcutaneously.

December 15th. Patient rested tolerably well during the night; increased rigidity of the jaws; not able to open the mouth over half an inch; complained of stiffness in the back of his neck; body bathed in perspiration; pulse one hundred and twelve. Gave Fleming's aconite tincture, two drops, every second hour. Seven P. M.: pulse one hundred and twenty; perspiration less; temperature increased to the hand; jaws more fixed than at last visit; complained of shooting pain in the injured limb; wounds looking well: aconite to be continued, and increased one drop every third hour; also one fourth grain of morphia hypodermically at ten o'clock. Half-past ten P. M.: pulse one hundred and twenty; general condition much as last visit; had taken the morphia as prescribed.

December 16th, half-past eight A. M. Patient very much as last night; had great thirst, and complained that he did not sleep; jaws almost immovable; little or no inclination for food since yesterday; considerable difficulty in swallowing; head drawn slightly backward; pulse one hundred and twenty, but regular; bowels not moved for forty-eight hours. The aconite tincture had been given every third hour during the night, six drops being given at eight A. M. Prescribed the extract of Calabar bean, one fourth grain, hypodermically. The patient had been taking quinine and milk-punch, which were continued. Castor-oil, to move his bowels. Eleven A. M.: symptoms unchanged; pulse one hundred and fifteen: gave

Calabar extract, one fourth grain, hypodermically. Two P. M.: pulse one hundred and twelve; general symptoms about the same: gave extract of Calabar bean, one-fourth grain, hypodermically. Five P. M.: increased thirst; pulse one hundred and twelve; complained of more pain in the injured limb: wounds looking well, except at the lower angle of the one over the joint, which indicated at this point renewed sloughing; poultice ordered to this wound, and dry lint-dressing continued on the other: the bowels had acted: gave extract of Calabar bean, one half grain, by the mouth. Seven P. M.: pulse one hundred and fifteen; great deal of thirst; swallowed, but with some difficulty; much troubled with stringy mucus in the throat, which he expectorated with difficulty: gave extract of Calabar bean, one grain, by the mouth. Nine P. M.: His jaws were sufficiently relaxed to introduce the forefinger between the teeth; pulse one hundred and twenty; pupil very much contracted; great anxiety; and increased mucous secretion in the throat, which greatly annoyed the patient: ordered the extract of Calabar bean, one grain, by the mouth. Eleven P. M.: patient's condition was about as at my last visit; wakefulness; great thirst: one third grain of morphia, given hypodermically, and one half grain of extract of Calabar bean, by the mouth, and one grain ordered to be given at two o'clock in the morning.

December 17th, eight A. M. Pulse one hundred and ten; pupil not so much contracted; head a little more drawn back. Gave the extract of Calabar bean, one grain, by the mouth. Half-past ten A. M.: condition same: gave one grain of the extract of Calabar bean by the mouth. Half-past twelve P. M.: condition same, except a little better control over the jaws; pupil more contracted: ordered the extract of Calabar bean, one grain, by the mouth. Three P. M.: the patient's jaws opened better, and more relaxation about the muscles of the neck; pulse one hundred and two; pupils very much contracted; he swallowed more freely, and was generally more

comfortable; said that since the last dose of the bean he had a sensation of sinking: ordered one grain of the extract of Calabar bean, given by the mouth, at four P. M. Six P. M.: about the same; constant hawking to relieve himself of the stringy mucus in his throat; still complained of shooting-pain in his leg, with a great deal of spasmodic jerking of the same: ordered the wounds to be cauterized with nitrate of silver, then used warm-water dressing and oil silk, and directed one grain of Calabar bean to be given by the mouth. Eight P. M.: the pulse was one hundred and twenty; jaws could be opened about three fourths of an inch; pupils were very much contracted; severe darting pains in the leg: one eightieth of a grain of atropia hypodermically. Ten P. M.: pulse one hundred and twenty; spasms occurred occasionally; muscles of the abdomen rigid: one eightieth of a grain of atropia hypodermically. Half-past eleven P. M.: pupils more dilated; increased pain in the limb: one half grain of morphia hypodermically.

December 18th, three A. M. The symptoms were aggravated; patient's pulse was one hundred and sixty-five; his body was bathed in perspiration; jaws closed and immovable; the head was drawn more back; spasm occurred every fifteen minutes, and was excited by moving or attempting to swallow: ordered atropine, one one-hundred-and-twentieth of a grain, hypodermically. Eight A. M.: patient greatly exhausted; pulse one hundred and thirty, and very small; spasms frequent; increased rigidity of the abdominal muscles and entire inability to swallow: extract of Calabar bean, one half grain, hypodermically, and injections of whisky and beef-tea per anum. Half-past eleven A. M.: pulse was one hundred and twenty; opened his jaws very slightly; complained of less pain in the limb: extract of Calabar bean, one half grain, hppodermically. Half-past one P. M.: pupils dilated; other symptoms much the same: extract of Calabar bean, one half grain, hypodermically; beef-tea and whisky injections continued. Four P. M.: patient more quiet; could open his jaws about one fourth of an inch;

did not complain of so much pain in the limb; pulse was one hundred and twenty; pupil a great deal contracted; refused food, and took water with difficulty: extract of Calabar bean, one half grain, hypodermically. Half-past six P. M.: pulse one hundred and twenty, soft and regular; abdominal muscles not so tense; other symptoms as at last visit; had taken a pint of good beef-tea by the mouth: extract Calabar bean, one half grain, hypodermically. Nine P. M.: much the same; pulse one hundred and twenty; pupils tolerably well contracted; frequent spasmodic jerking of the injured limb; considerable thirst; took water well; had an action on the bowels: extract Calabar bean, one half grain, hypodermically; one half grain of morphia at twelve o'clock, and one grain of the extract of Calabar bean, by the mouth, at three o'clock in the morning.

December 19th, nine A. M. Spent a restless night; spasms more frequent, especially affecting the left side; left leg and arm flexed, and very rigid; jaws entirely closed; pupil about natural; pulse one hundred and twenty-five; had taken no nourishment during the night. Ordered the extract of Calabar bean, one and a half grains, hypodermically; milk, egg, and whisky per anum. Half-past eleven A. M.: pulse one hundred and twenty-five; arm and leg more flexible; not so much rigidness generally in the muscles: extract of Calabar bean, one half grain, hypodermically. Two P. M.: pulse one hundred and twenty; pupils well contracted; more general relaxation of the muscles; nervous twitching and starting of the injured limb: extract of Calabar bean, three fourths of a grain, hypodermically. Half-past six P. M.: pulse was one hundred and twenty-five; pupils more contracted; a great deal of jerking and twitching of the injured limb; complained of feeling very hot: gave extract of Calabar bean, one half grain, hypodermically. Ten P. M.: pulse one hundred and twenty; general symptoms unchanged; has taken some nourishment by the mouth; is restless, and disinclined to sleep: ordered extract of Calabar

bean, one half grain, hypodermically, and two drachms of the tincture of hyoscyamus to be given at twelve o'clock, if he should continue restless.

December 20th, eight A. M. Found the patient sleeping, which he had done during the latter part of the night; had taken milk freely during the night. Eleven A. M.: patient was still sleeping; complained of nothing but stiffness of jaws; pulse one hundred and twenty-five. One P. M.: patient had been sleeping ever since last visit; slept with mouth well open, but when awake was able to control his jaws but slightly; pulse one hundred and twenty-eight. Half-past four P. M.: much the same; had been sleeping quietly, with his mouth wide open; was easily aroused, and disinclined to be disturbed; called for water when awake, but refused to swallow it, the effort producing spasm; pulse one hundred and thirty: ordered extract of Calabar bean, one half grain, hypodermically. Half-past seven P. M.: was much the same as at last visit; pulse one hundred and twenty; twitching and jerking in the injured leg; opened his jaws about three fourths of an inch; general muscular relaxation: extract of Calabar bean, one half grain, hypodermically. Half-past ten P. M.: increased restlessness and spasmodic jerking of the leg: extract of Calabar bean, one half grain, hypodermically.

December 21st, half-past eight A. M. Patient was more anxious and restless; more rigidity of the muscles of the left arm, leg, and abdomen; more inability to open the jaws; pulse one hundred and fifteen; wounds too dry: ordered the extract of Calabar bean, one half grain, hypodermically; the enema of whisky, egg, and beef-tea to be continued. Half-past eleven A. M.: pulse one hundred and twenty-five, and more feeble; temperature one hundred and two degrees; more nervous jerking of the injured limb, and a good deal of rigidness of the abdominal muscles: extract of the Calabar bean, three fourths of a grain, hypodermically. One P. M.: increased spasmodic twitching and jerking of the injured

limb; pulse one hundred and thirty, smaller and more compressible; patient more listless. Death at four P. M., eight days after the tetanic symptoms set in, and eighteen days after the reception of the injury.

LOUISVILLE.

[The cases reported by Drs. Peter and Richardson serve to establish that the Calabar bean possesses at least some power in relaxing muscular rigidity and subduing spasms in tetanus. In both cases the drug was given in quantities which are exceedingly small in comparison with those recently administered by Dr. Eben Watson; yet in Dr. Peter's patient the effect was almost uniformly decided, and lasted a considerable time. In Dr. Peter's hands the bean seemed finally to lose its effect when exhibited by the mouth, and to be invariably potent when taken subcutaneously. Dr. Richardson also used it hypodermically with good results. Yet Dr. Watson, who has had more experience with the medicine than any other writer, says that when administered subcutaneously its effects are neither reliable nor decided.

Other cases of tetanus have been treated in this city, by the same agents used by Drs. Peter and Richardson, with a like result; but, as the purpose of the present remarks is to substantiate certain statements made in the August number of this journal, we hasten on.

The reports of four hundred and fifteen cases of tetanus have been tabulated and examined by my friend Dr. R. O. Cowling. Of these three hundred and eighty-five have been obtained from periodical literature, foreign and domestic, while the remaining thirty have been furnished from the unpublished experience of medical friends in this city. A tabular view of so many cases would far exceed my prescribed limits; results only will therefore be given.

Of the whole number reported two hundred and thirty-three recovered; one hundred and eighty-two died. For

purposes of comparison these results are certainly worthless; but they serve to show how very imperfect statistics are upon this point—as much so now as when Mr. Curling's tables were published in 1837. The reason is, I think, obvious—recoveries only, as a general rule, are published—deaths not being considered a matter of interest. For instance, of the unpublished cases occurring in this city ninety per cent. died, or but three in thirty recovered. Of these one received no treatment except nourishment; the second was cured by a Thompsonian with lobelia and steam; while the third can not justly be said to have been a case of tetanus—slight trismus, which yielded after a few injections of atropia, being the only symptom. We can affirm, from the character of the practitioners who treated these cases, that all was done that skill and patience could effect; the fearful percentage of deaths that marked the results simply belongs to the history of the disease. But while these tables are valueless as to aggregate deaths and cures, and are of not much more value as indices of the comparative efficacy of different remedies, yet in some important respects they certainly serve to throw light on tetanus. They illustrate somewhat the influence of sex and age, the situation and character of the wounds followed by tetanus, the date of invasion, and the duration of the tetanic symptoms; on all which points they contain facts well worth remembering.

Sex was stated in three hundred and seventy-five cases; eighty per cent. were males. This disparity may be accounted for by the greater exposure of men to the exciting causes of tetanus; yet in thirty-four cases of idiopathic tetanus seventy per cent. were males. Among the male cases forty-four per cent. were recoveries; among the female cases fifty-eight per cent., or, excluding the cases of puerperal tetanus, sixty-three per cent. were recoveries. These results approximate to those given by Mr. Curling, but not with those stated by Mr. Poland (Holmes's System of Surgery), who gives a far greater pre-

ponderance of male cases, and female deaths. Seven per cent. of the cases occurred in children under ten years of age; twenty per cent. between the ages of ten and twenty years. Fifty-two of the cases being reported as adults, the percentage of the succeeding decades can not be made out. After fifty years fifteen cases are recorded; a single case at eighty-nine is reported. Sixty-two per cent. of the cases under ten years died. Between ten and twenty years the mortality fell to thirty-eight per cent., while in the general result forty-six per cent. died. If we assume that so striking a difference in such large numbers of cases is not a coincident result, it would serve to show that while tetanus occurs comparatively but seldom in persons below ten years of age, it is peculiarly fatal at that period of life—a fatality which would be immensely augmented if we added to the list the vast number of fatal cases of trismus nascentium. Prognosis, so far as it is influenced by age, seems to be most favorable between the years of ten and twenty, and least so in the first decade of life.

The tables confirm what is already known in reference to the character of the wounds which are followed by tetanus; namely, that they are of every character, stage, or condition. Punctured wounds and wounds of the extremities still rank first in this class of injuries. The popular idea has been that, as a cause of tetanus, injuries of the foot were far in excess of lesions elsewhere. The tables sustain this opinion as to punctured wounds of the foot; the majority of such injuries being caused by nails run into the foot. Yet of the whole number of cases there were but eighty-eight wounds of the foot against ninety cases of injuries about the hand. The tables embrace twenty-eight cases of wounds in the upper extremity, exclusive of the hand, and sixty-seven in the lower extremity, exclusive of the foot. Twenty cases arose from wounds about the head; four from injuries of the trunk; one from chancre; one from abrasion of the cornea;

and ten followed abortion. As elements of prognosis, neither the situation nor character of the wound appears to be of any weight. Forty per cent. of deaths followed injuries of the hand, and forty-four per cent. injuries of the foot. It is worthy of remark that the deaths in puerperal tetanus rose to ninety per cent.

Date of Invasion. A more important consideration than either of the preceding is the time at which tetanic symptoms first show themselves. In one hundred and ninety-six cases the disease came on within two weeks after the injury; of these sixty-two and a half per cent. died. From the fourteenth to the twenty-first day, inclusive, there were eighty-one cases, with seventeen per cent. of deaths; from the twenty-first to the forty-fourth day there were seventeen cases, with three deaths—about seventeen per cent. In cases occurring within the first three days after the injury, recoveries exceeded deaths as fourteen to eleven; in cases occurring from the fourth to the ninth day, inclusive, deaths exceeded recoveries as seventy-three to thirty-three—sixty-nine per cent.; in cases beginning on the thirteenth day deaths stood to recoveries as seven to three; but where the disease set in on the fourteenth day, recoveries were notably in excess of deaths—twenty to three.

It is a source of regret that in more than one fourth of all the cases the date of invasion is not given; but it has been recorded in a sufficient number to show both the difference between acute and chronic tetanus—the difference between the percentages themselves — and finally, how these differ from the standard of forty-six per cent. of total deaths. It is true that the date of invasion is not the only element of dissimilarity between acute and chronic tetanus, but it is an important one; the degree of tetanic symptoms, the muscles involved, pulse, temperature, etc., are others which should not be lost sight of, but which our tables do not show in sufficient fullness to warrant even an approximate conclusion.

Duration of Symptoms. The well-known aphorism of Hippocrates, that tetanus is nearly always fatal within four days after it sets in, is well sustained by these tables. Sir Thomas Watson suggested that this period be extended to nine days. These tables show that the first well-marked diminution in the death ratio occurred on the fourteenth day of the disease, and from that period the recoveries were progressively in excess of the deaths. Within the first four days we have ninety deaths to nine recoveries; within the first nine days one hundred and thirty-one deaths to thirty-nine recoveries. From the ninth to the twenty-third day there are twenty-three deaths to eighty-two recoveries; and from the twenty-third day on there are seventy-one recoveries to three deaths, all of which occurred on the twenty-eighth day. The greatest number of deaths is on the second day—thirty-one. On the fourth day there were twenty-one deaths. There is a marked falling off in deaths on the fifth day, when there were but eleven deaths; from this time the percentage of deaths steadily diminished. The longest duration of symptoms is two hundred and forty days; the shortest, ending in recovery, is alluded to in the beginning of this article; the shortest, ending in death, is in a few minutes. Nine cases lasted forty-two days; eighteen cases lasted thirty days. Between these two periods we find nineteen cases. Sixty and ninety days are also represented.

The Pulse and Temperature. These have been recorded in too small a number of instances to admit of any deductions. Dr. Radcliffe (Reynolds's System of Medicine) has stated that there is an absence of fever in tetanus, and explains the heat and frequency of pulse, when they occur, by the dyspnœa, which urges the skin to take on compensative action. In three cases in which the temperature was recorded, and published now for the first time, the mercury rose to one hundred and six and one hundred and seven degrees; they were all fatal. In two other cases, also fatal, observed by the writer, the

pulse was one hundred and twenty from the beginning of the attack.

Treatment. As we approach the subject of treatment, we feel that it is something which figures can not compass; so varied, so complicated has it been that it sets at defiance all efforts at anything like accurate tabulation. The bare enumeration of the remedies which have been used in this formidable disease would fill one of these pages. Of the fifty leading agents mentioned in the tables recoveries are credited to each; yet, if we analyze almost any case taken at random from the list, we find that in the smallest number of instances has the treatment been trusted to a single agent alone. In most cases, indeed, varied complications of the most powerful often along with the least efficient agents in the pharmacopœia were made, thereby rendering it utterly impossible to decide which, if either, was entitled to the credit of the cure. To illustrate our meaning—the following is recorded as a cure by subcarbonate of iron: Bleeding to sixteen ounces; electuary of subcarbonate of iron and turpentine; a blister to the pit of the stomach; turpentine enema; frictions with camphor liniment; and tonics. Does any one who reads this believe that the iron effected the cure; or, indeed, that either of the remedies used exercised any real influence over the disease?

Dr. Cowling has arranged in tables all the various remedies used which could apparently influence the result—has noted the whole number, with the percentage of recoveries under each: the number of recoveries which occurred in cases where the invasion was under nine days; the number of recoveries where the duration of the disease was less than fourteen days; and, *per contra*, has set down the deaths which took place where the date of invasion was over nine days, and where the symptoms lasted more than fourteen days. A careful analysis of these tables warrants, I think, the statement that the results of treatment by the different remedies are so nearly the same that no one agent

can justly be said to possess any decided superiority over any other.

It is almost needless to remark that the mere time of invasion is not the only characteristic by which acute is distinguished from chronic tetanus, but it is an exceedingly heavy factor in any attempt to determine the effect of treatment and the comparative value of the different remedies used in the disease. Without it no correct estimate can be formed of the part which any individual agent, or which treatment as a whole, plays in the management of the affection. To economize space rather than because it fully expresses the several features whereby acute is known from chronic tetanus, I shall in the remainder of my remarks designate that form of the disease which supervenes within nine days after the injury as *acute*, and that which occurs after that period as *chronic* tetanus.

Calabar bean was given in thirty-nine cases, with thirty-nine per cent. of recoveries. Of these reputed cures but one was of acute tetanus; five others were in cases which recovered before the expiration of fourteen days. *Per contra*, there were ten deaths from chronic tetanus.

Indian Hemp. Used in twenty-five cases, with sixty-four per cent. of recoveries, of which three cases were acute, and six recovered before the symptoms lasted fourteen days. One chronic case died, and one after fourteen days.

Chloroform relieved seventy per cent. of thirty-five cases, nine of which were acute, and eight recovered before fourteen days. Three chronic cases died, and two after symptoms lasted fourteen days.

Ether. Sixty per cent. of fifteen cases recovered: five acute; seven inside of fourteen days. One chronic case died.

Opium. Fifty-seven per cent. of one hundred and sixty-five cases recovered: twenty-two acute; twenty-nine before the fourteenth day. Twenty-six chronic cases were lost, and four after the disease had continued fourteen days.

Tobacco relieved fifty per cent. of forty-one cases: six acute; six before fourteen days of the disease. Four chronic cases died, and one after fourteen days.

Quinine. Seventy-three per cent. of fifteen cases recovered: one acute; three before fourteen days. Three chronic cases ended fatally, and one after fourteen days duration.

Aconite. Eight per cent. of fourteen cases recovered: none acute; none recovered before fourteen days. Death in one chronic case.

Stimulants. Eighty per cent. of thirty-three cases recovered: four acute; six within fourteen days. Six chronic cases died, and three after fourteen days.

Mercury. Fifty-seven per cent. of seventy-five cases got well: eight acute; twelve before fourteen days. Seventeen chronic cases were lost, and two after fourteen days.

Bleeding. Fifty-five per cent. of fifty-eight cases recovered: nine acute; ten before the fourteenth day. Seven chronic cases were lost, and two after fourteen days.

Cold affusion. Seventy-three per cent. of eleven cases recovered: three acute; three before fourteen days. Two chronic cases died.

Ice-bags. Seventy-seven per cent. of nine cases recovered: one acute; two in less than fourteen days.

Amputation. Sixty per cent. of seventeen cases recovered: four acute; four in less than fourteen days. Three chronic cases died, and one after fourteen days.

Division of nerve relieved seventy-five per cent. of three cases: one acute; one before the fourteenth day. One chronic case died.

Purgatives. Sixty-six per cent. of seventy-four cases recovered: thirteen acute; twelve before fourteen days. Ten chronic cases died, and three after fourteen days.

Turpentine relieved seventy per cent. of sixteen cases: six acute; four before fourteen days. Five chronic cases died, and two after fourteen days.

These facts, as set forth by Dr. Cowling, would seem to show that we are not improving in our treatment of tetanus. The Calabar bean, of which such sanguine hopes are entertained by some, has not accomplished even so much as other remedies. By these tables, chloroform takes rank as the most efficient agent yet known in acute tetanus; while even mercury and venesection, which belong to a past age, excel the bean not only in general results, but in the power to arrest the disease in its acute form. An astonishing fact is that in the long list of remedies there are but three—woorari, warm baths, and musk—where the percentage of cures was less than by the Calabar bean; although each, save the woorari, effected an equal number of cures of acute tetanus. It is but just, however, to the friends of the bean to allow that the range of its effects and of its doses has been, up to the present time, so little understood that it can not be said to have yet been sufficiently tested. The bean seems unquestionably to possess very marked power as a relaxant, thereby allowing the administration of food during its exhibition in a degree not possessed by other agents.

A careful review of the tables suggests, we think, the following conclusions:

1. That traumatic tetanus occurs in males in the proportion of four to one, and tends to recovery oftenest in females.

2. That tetanus is most fatal in persons under ten years of age; that it is least fatal between ten and twenty years.

3. That traumatic tetanus usually supervenes between four and nine days after the injury; and these cases represent the largest mortality.

4. Recoveries from traumatic tetanus have been usually in cases in which the disease occurs subsequent to nine days after the injury.

5. When the symptoms last fourteen days, recovery is the rule, and death the exception, *apparently independent of the treatment.*

6. Of all the forms of tetanus, that appearing in the puerperal state is the most fatal.

7. That chloroform, up to this time, has yielded the largest percentage of cures in acute tetanus.

8. The true test of a remedy for tetanus is its influence on the history of the disease. *(a)* Does it cure cases in which the disease has set in previous to the ninth day? *(b)* Does it fail in cases whose duration exceeds fourteen days?

9. That no agent, tried by these tests, has yet established its claims as a true remedy for tetanus.—D. W. Y.]

LOUISVILLE.

ON THE CAUSE OF MALARIAL FEVERS.

BY DUFF CHILD, M. D.

From an ingenious and interesting paper by Dr. Child, styled "An attempt to point out the cause of malarial fevers," we condense some of the leading points for the benefit particularly of such of our readers as live in regions where miasmatic diseases prevail.

Dr. C. believes that marsh miasma is one form of the gaseous compound known as *cyanogen* (C_2N), either free or in combination, floating in the atmosphere, and *transiently* in the water of malarious localities. He was led to this opinion by three circumstances: one was the resemblance which exists between the symptoms of malarial disease and those of poisoning by cyanogen; another was the similarity between the odors given off by peach blossoms, peach kernels, oleander, and other vegetable substances known to contain cyanogen, and that emitted by the dead and decaying wood in lands subject to overflow. He attempted to demonstrate the

existence of cyanogen in the emanations from and near the surface of the earth, in districts where malarial affections abound, by a series of interesting if not conclusive experiments. But before giving these the thread of Dr. C.'s reasoning will best be preserved by quoting the following tabular view of symptoms caused by cyanogen or compounds and malaria:

Cyanogen.	Malaria.
1. Weight and pain in head; confusion of intellect; giddiness.	1. Sense of weight or tension in head; head confused; vertigo; sometimes deep-seated pain.
2. Insensibility.	2. Lethargic insensibility.
3. Nausea; vomiting sometimes.	3. Stomach irritable; frequent efforts at vomiting.
4. Loss of muscular power.	4. Lassitude; great debility.
5. Pulse sometimes quick, but commonly tremulous and feeble.	5. Pulse small, frequent, struggling.
6. Respiration slow, deep, gasping, and sometimes stertorous.	6. Respiration slow, anxious, labored, sometimes hurried, sometimes stertorous.
7. Skin cold, with clammy perspiration; cold hands and feet; finger nails livid.	7. Skin cold, with clammy perspiration; cold hands and feet, etc.
8. Spasmodic closure of jaws; tetanic spasms, preceding death.	8. Tetanic closure of jaws sometimes; tetanic spasms in very serious cases.
9. Involuntary evacuations, in some cases.	9. Bowels sometimes confined, most frequently relaxed; discharges copious.

It will be observed that Dr. C. has given the symptoms of a paroxysm of pernicious fever, his reason for doing so being that he considers this form of manifestation as that in which the full power and effect of malarial disease is best shown.

"The symptoms of chronic cyanogen-poisoning, especially as observed in workmen exposed to vapors containing this substance, are dull pain in the head, darting pains over the eyes, abnormal sounds in the ears, dizziness, vertigo, pain in precordial region, difficult respiratiom, constriction of throat, feelings as of suffocation, and alternate wakefulness and somnolency. Physicians familiar with that form of malarial fever commonly called '*dumb ague*' will have, I think, no difficulty in tracing the resemblance it frequently bears to the collection of symptoms quoted above."

The manner in which Dr. Child detected, as he believes, the prevalence of cyanogen in the surface emanations of miasmatic soils was by using Schönbein's test-paper (prepared by tincture of guaiacum and copper), which, when properly prepared, yields its characteristic reäction only to cyanogen in some one of its forms. Strips of this paper were secured a few inches above the ground, in a marshy spot, and left over night. When examined the following morning they all presented the characteristic reäction, but in faint degree. This experiment not being altogether satisfactory, it was repeated in two other localities where miasmatic affections prevail, and in a somewhat different manner. The strips were inserted a short distance into the fissures or "sun-cracks" with which the soil was covered.

"The result of this trial was very marked and satisfactory. That portion of the paper in the fissures was changed to a sky-blue color, while the part which projected had altered very little, showing a greenish brown tint. A short exposure of the blue extremity to sunlight changed it to the greenish brown hue also. I attribute this difference in color between the two extremities of the strips to the action of sun-light, which I believe not only destroys the blue color of the test-paper, but decomposes and renders less noxious the poisonous emanation producing that color. In the test strips the boundary between the tints of the opposite ends was sharply drawn, showing how far the paper had been protected from the sun's rays by the sheltering sides of the fissures."

If it be granted that malaria *is* cyanogen, or some vaporous compound containing this poison, emanating from the soil and mingling with the air and water, Dr. C. has no difficulty in explaining the circumstances attending or supposed to be favorable to the development of the fever poison — why, for instance, it affects low and moist localities, and requires for its production a certain range of temperature, etc.

Dr. C. believes that the poison of malaria is removed from the system chiefly through the kidneys, and in support of this view

quotes Golding Bird, who, however, he says, has expressed no opinion concerning the precise nature of the poison. Piretti, of Rome, asserts that in persons laboring under malarial disease the urea normally present in urine is replaced by cyanate of ammonia; that when ague is successfully treated by quinia, the cyanate gradually disappears and is replaced by true urea. Dr. C. suggests:

"If cyanide of ammonium (Cy N H_4 or $C_2N_2H_4$), lacking only two equivalents of oxygen to make it cyanate of ammonia ($C_2N_2H_4O_2$), were the form in which malarious poison enters the system, it might readily be converted by the addition of oxygen, found uncombined in the blood, into the cyanate, and thus be eliminated from the body."

The remainder of Dr. C.'s paper is occupied in the attempt to explain the periodicity of malarial diseases, and the statement of many interesting facts connected with the carbide of nitrogen, miasma, etc. But our space obliges us to bring this very imperfect abstract to a close. Dr. Child is continuing his experiments in this wide and important field of inquiry, and has promised to give their results at some future day to the readers of the Practitioner.

LOUISVILLE.

Reviews.

The Transactions of the New York Academy of Medicine. Vol. III., No. 9. "Some Clinical Observations on the Malignant Diseases of the Uterus." By FORDYCE BARKER, M. D., Professor of Clinical Midwifery in the Bellevue Hospital Medical College, etc. New York: Wm. Wood & Co.

Professor Barker, in this monograph, first discusses the *frequency* of malignant uterine diseases; then the *comparative exemption of negresses*; then considers at more length the *etiology*. Under this last head his own as well as the statistics of other authors show that hereditary influence is a factor, if at all, in but a small minority of cases; indeed he goes so far as to state (p. 7) "there is no evidence that the *disease* is, in any proper use of the term, *hereditary*." The relations of phthisis and uterine cancer are referred to, and the former was found to exist in two hundred and forty-seven of the families of those having the latter. We may observe, by the way, that a most interesting paper was read before the Academy of Medicine, Paris, in May last, by Dr. Burdel, in which these relations were studied in the opposite order; and the author's carefully-prepared statistics, embracing more than one hundred families, showed that parents affected with cancer had children who were affected with the tubercular diathesis. This statement is eminently worthy the attention of the profession.

The topics next discussed by Prof. Barker are *classification*, *symptoms*, *diagnosis*, *duration of the disease*, and finally *treatment*. He differs from other authorities materially upon the fourth of these points; for, while West gives fifteen months,

Lebert sixteen, Simpson two to two and a half years, in twenty-six cases he has found the average duration three years and eight months. He refers to two of his patients, one of whom has lived five years and the other eleven years with uterine cancer.

In cancroid disease he advocates ablation, if the operation be performed sufficiently early to extirpate the entire diseased structure; and for this operation he prefers the knife to the ecraseur. Where amputation of the diseased growth is not possible in this or other forms, cauterization may be resorted to: the actual cautery, acid nitrate of mercury, or chromic acid (one hundred grains to the ounce of water); his preference being for the first, and the chief objection to the second being the liability to the production of severe salivation. As constitutional anodynes, he advocates opium or chloroform, no mention being made of the hypodermic use of morphia; while for the sensitiveness of the ulcerated surface an iodoform pessary, for which we give his formula, premising that we hope the students of Bellevue are not taught to write prescriptions thus incorrectly, for there are three obvious errors in this:

℞.—Iodoform, gr. x; butyri cacao, ʒj; glycerin., gtt. v. Mix. One pessary.

Prof. Barker advises the administration of arsenic—"three drops of Fowler's solution, to be taken always after eating;" and also states that "the Missisquoi water of St. Albans, Vt., has in some cases seemed to be of great benefit in arresting for a time the progress of the disease."

Lord Bacon urged upon physicians the study of those diseases that were regarded as incurable, believing that such study would result in the discovery of valuable remedies. With this view, the labor of Prof. Barker, though he has brought together much—too much it seems to us, for one that is already of such famous ability and attainments, and

for the audience his paper was presented to—that is already quite familiar to the profession, is to be regarded with great favor. He has certainly done a good service in showing that the victim of uterine cancer has a longer lease upon life than has hitherto been believed, and that in some instances where a fatal result seemed inevitable cure occurred. The doctors who are called to treat and the sad sufferers who are called to endure one of the most loathsome and terrible of human maladies will, in view of this contribution from Dr. Barker, thank God and take courage.

Eighth Annual Report of the Pekin Hospital; in connection with the London Missionary Society, for the year 1869. By JOHN DUDGEON, M. D., C. M. Pekin, 1870.

We are indebted to our friend Professor W. A. P. Martin, of the University of Pekin, for this report. From it we learn the number of patients, in-door and out-door, for the year 1869 was 14,420, more than three fourths being males. The chief medical cases were asthma, dyspepsia, rheumatism, and neuralgia; surgical cases, ulcers and abscesses—important operations, as amputations, removal of necrosed bones of the lower jaw, etc.

Small-pox is an *endemic* in China; not more than eight per cent. of the children, in large towns even, are vaccinated. When the Chinese vaccinate they make three punctures in each arm and introduce the matter subcutaneously. It is evident that in this practice our celestials, though acting upon an absurd theory—viz., that the poison of the "heavenly flowers," the name for variola, is located at these six different points—insure the greatest protective power.

Among the curious statements made by Dr. Dudgeon in his report is this: "A custom prevails in the south of China of selling women's milk on the streets or hiring wet-nurses

for the old and infirm of both sexes. Doctors sometimes recommend this treatment to well-to-do patients when all other measures have failed. In the case of men a screen intervenes between nurse and patient." We remember reading in Bœrhaave the suggestion that "baths of human milk recently extracted" might be useful in promoting longevity; the Chinese plan is much more economical.

The following passage from page 9 of the report shows that the Chinese have priority over an American surgeon in the earth-dressing; and, by the way, a medical friend, more than two years ago, told us he remembered in his reading some ancient author—Herodotus he thought—that dry clay was spoken of as a successful application to wounds: "The application of the 'dry-earth' system for wounds is not new in China. It is one of the commonest applications to abscesses and ulcers. Yellow earth—which abounds here a few feet below the surface, and which is used extensively for mixing with coal dust, forming balls for domestic use—with the addition of some aromatic powder, is widely used. It occurs in their medical books among remedial agents."

The report concludes with some remarks on Chinese medicine. The author, after referring to the ignorance and the absurdities characterizing it, adds: "There is yet a very considerable residuum of shrewd observations of symptoms and diagnosis, and sometimes beneficial, or at least harmless and inert, modes of treatment."

A Treatise on Medical Electricity, Theoretical and Practical, etc. By JULIUS ALTHAUS, M. D., Member of the Royal College of Physicians, etc. Second edition; revised and partly rewritten.

The readers of the Practitioner will remember that an article upon medical electricity appeared in the July and a

a review of Meyer's treatise upon the same subject in the August number of this work. The book, titled as above, comes from London with the imprint of Lindsay and Blakiston, and is offered for review. The growing importance of electro-therapy, and the undeserved neglect which it has received from the generality of practitioners, make the sum of our apology for giving an extended notice of another work treating of that branch of medicine.

Years ago, when its first edition was issued, it stood almost the sole English advocate of the claims of electricity during its evil days. For its thorough practical qualities it was regarded as without an equal in the purview of our acquaintance; and, although a multitude of books upon the same subject have since been published, Althaus has kept even pace with modern improvement, and it comes to us now holding its old rank as a standard work, with its size enlarged three-fold.

In the opening chapter we still encounter the objectionable hypothesis of two electric fluids, consisting of molecules, with attractive and repellant powers. There is an odor of antiquity about such ideas and terms scarcely agreeable to those accustomed to the prevalent doctrines of polarity and the unity of force. The reader will condone this important error—for *error* it would be called by a very large majority of modern physicists—in consideration of some vivid engravings and luminous descriptions of apparatuses which can not be found in any similar work.

The second chapter, wherein most of the additions have been made, is a bountiful feast of experiments and theories in electro-physiology; nor is it a mere compilation from Dubois, Reymond, Matteucci, and others so often quoted. The author indulges in free criticism and frequent dashes of original thought, in which he offers his own well-founded views, not seldom to the detriment of received opinions.

The third chapter is devoted to medical electric appliances

and the various methods of administration. While ample justice is done to other systems, only a short paragraph is devoted to the system of "general faradization," and even that mentions skeptically its reputed efficacy in paralysis; and in his fifth chapter the author strongly deprecates this form of exhibition. We have lately had an opportunity of testing its virtues in two cases of hemiplegia, of undoubted cerebral origin, both of which were cured.

The first case was in a lady of fifty-five years. Local faradization was proposed; but the patient, prompted by modesty, strenuously objected to the required manipulation. It was determined to try if aught could be done without exposure of the afflicted members. One electrode, with the foot of the ailing side, was immersed in a basin of water; the other was held in the corresponding hand. By alternating the direction of a feeble current, applied in this way every day for a month, the patient was completely restored.

The second case was also that of a lady, aged fifty-three years. In May last she was stricken with an apoplexy, which was followed by coma more or less profound, and lasting three days. When consciousness returned it was discovered that one side of the face and the right extremities were partly paralyzed and lacking in sensibility. At the expiration of two months from the seizure she was in the following condition: memory and powers of attention much impaired; speech very fragmentary and hesitating. The face had gradually resumed its normal expression; but the right hand was useless for its ordinary offices, and the right foot and leg refused to perform their work. The above-named method was employed, and after daily sittings for six weeks the limbs have recovered almost their former cunning and strength. She dresses and feeds herself, and walks about freely, though fatigue is soon induced. Her memory is much better, and her speech is restored to its natural fluency. The conclusion is irresistible that a feeble, induced current, transmitted in this

unorthodox way, deserves at least honorable mention as a stimulus to the vital energy of palsied parts.

This chapter deals also with the operation of electrolysis, whereby surgery has been robbed of many of its terrors. It was first introduced by the author in treating tumors, diseases of blood-vessels, effusions, etc. He gives as the general result of his investigations, with the continuous current sent by needles through the different structures of the body, "that no animal tissue whatever can withstand the disintegrating effect of the negative pole;" and "no galvanic heat is introduced if the current is applied in such a manner that the whole body, or part of the body, or animal liquids are placed within the circuit of the battery." To accomplish this he adjusts the moistened positive pole outside upon the skin.

The concluding third of the book is an able dissertation upon electro-therapeutics. It constitutes a treatise in which is condensed almost everything a physician need to know about the matter. The aim of the author has been to exhibit the most practical truths in a perspicuous manner, and it will be the verdict of every reader that this self-imposed task has been well performed, as will be witnessed by the number of diseases treated, the lavish use of clinical illustration, and the apt style of his writing. J. W. H.

Lectures on Clinical Medicine. By A. TROUSSEAU, late Professor of Clinical Medicine, Paris, etc. Vol. III. Translated by JOHN ROSE CORMACK, M. D., F. R. S. E., etc. The New Sydenham Society, London, 1870.

The first two volumes of Prof. Trousseau's Clinical Lectures have been republished in this country, and have already been read by thousands of American physicians. This, the third volume, will, we understand, also shortly be reprinted in Philadelphia. The copy now before us is one of the publications

of the New Sydenham Society, London, and is uniform with the series of classic works issued by that enterprising and enlightened corporation. It contains lectures on the following subjects: specific element in disease; contagion; ozæna; stridulous laryngitis, or false croup; œdema of the larynx; aphonia, cauterization of the larynx; dilatation of the bronchi and bronchorrhœa; hemoptysis; pulmonary phthisis; gangrene of the lung; pleurisy, paracentesis of the chest; traumatic effusion of blood into the pleura, paracentesis of the chest; hydatids of the lung; pulmonary abscesses and peripneumonic vomicæ; treatment of pneumonia; paracentesis of the pericardium; organic affections of the heart; alcoholism; spermatorrhœa; nocturnal incontinence of urine; glucosuria, saccharine diabetes; polydipsia; vertigo a stomacho læsio. Those of our readers who are familiar with the teachings of the illustrious Frenchman will recognize in several of these topics subjects on which he was wont to dwell, and to the elucidation of which he gave so much time and labor.

Our present notice of the work must be brief, but we shall endeavor to have it embody, as far as our space will admit, the treatment pursued by the author in the several diseases he discusses.

Ozæna. Our author states that where this affection is unattended by disease of the bones, and treatment can be directed to the cause of the inflammation of the pituitary membrane, the cure is easy; but where the ozæna is either herpetic or scrofulous, constitutional remedies are nearly always insufficient if used alone, and it becomes necessary to trust rather to agents which can be applied in a direct manner to the diseased mucous membrane. Topical medication therefore is that on which our author places most reliance. Before this, however, can be used, it is indispensable that the mucous accumulations and the crusts which cover the pituitary membrane should be removed. This is done by the nasal douche, with either cold or tepid water. But, "do what

you may, it is not easy to accomplish a cure, nor can you ever obtain a cure in a short period." However successful the treatment may appear, if it be too soon discontinued the disease will at once return. Whatever the plan adopted, it should be persisted in for at least six or eight weeks after the disappearance of the fetor. After this time, if the improvement continues, the remedies may be applied in less concentrated form, and not so frequently, until finally at the expiration of several months they may be abandoned.

M. Trousseau states that at the menstrual periods there is generally an aggravation of the symptoms irrespective of treatment. The fetor nearly always returns somewhat at this time. The same also occurs under the influence of any cause which excites inflammation of the pituitary membrane. Whenever such special conditions arise the treatment must be carried out in its full rigor. Powders inspired by the nose (as snuff is taken), the direct application of caustic to the ulcerated parts, and injections of various kinds are the means generally employed. The following formulæ represent the four powders recommended by M. Trousseau.

No. I.	Subnitrate of bismuth, ...	of each 232 grains.
	Venetian talc, ...	
No. II.	Carbonate of potash, ...	30 grains.
	Sugar in fine powder, ...	232 grains.
No. III.	White precipitate, ...	$3\frac{5}{6}$ grains.
	Sugar in fine powder, ...	232 grains.
No. IV.	Red precipitate, ...	$3\frac{5}{6}$ grains.
	Sugar in fine powder, ...	232 grains.

M. Trousseau begins with the mercurial powders, which he gives as a snuff, twice or thrice a day, the frequency being regulated by the amount of irritation produced. If this be considerable, use less frequently, and for only a few days in succession. No such caution is needed when employing the bismuth and talc powder; this may be snuffed up as often and in as large quantities as patients may fancy. The chlorate of potash is also a useful snuff in ozæna; it acts

directly on the mucous surfaces, and is besides an excellent disinfectant. But powders of whatever kind can, as a rule, be employed only in adults; in children, injections are almost the only available treatment. The favorite injections with our author are: No. 1—chlorate of potash, one part; water, one hundred parts. No. 2—nitrate of silver, five parts; distilled water, one hundred parts. No. 3—sulphate of copper or zinc, five parts; distilled water, one hundred parts. "The pituitary mucous membrane is much more sensitive than is generally supposed," and in using injections they should at first be very weak; one fourth grain of either of the metal salts above named to an ounce of water is sometimes ill borne in the commencement. This extreme sensitiveness usually quickly disappears, but the solution ought never to be so strong as to produce suffering. The injections should be used for several days in succession—twice, thrice, or four times a day—after which, in adults, the powders ought to be resumed, and continued for a time, then the injections, and so on.

Notwithstanding the stress laid by Prof. T. on topical remedies in non-syphilitic ozæna, he yet admits that general treatment is of very great importance.

"Cod-liver oil taken for fifteen consecutive days in every month, and continued for a long time, is sometimes very useful. The tincture of iodine* administered over a period of several months, twice or thrice a day at meals, in a dose of from five to twenty drops, often produces exceedingly beneficial results in constitutional ozæna. Arsenical preparations perseveringly continued, as is usual in treating the herpetic diathesis, are still more powerful adjuvants to the topical medication."

Stridulous laryngitis, or *false croup*, the next subject in order, M. Trousseau says is a disease which cures itself. Sponging the throat with very hot water, as recommended

* The tincture of iodine of the French Codex consists of one part of iodine to twelve of alcohol.

by Graves, "is usually sufficient without any other means, such as emetics," for the relief of the attack.

In *œdema of the larynx*, "where the inflammation is simple and very acute, and the febrile reäction intense," our author resorts at once to antiphlogistic remedies.

> "One or two large general bleedings, and the abstraction of blood from the cervical region by leeches or cupping, will give great relief, and moderate the severity of the symptoms. Recourse will afterward be had to cauterization with nitrate of silver, to insufflation of alum or tannin into the back part of the throat, and as far down as the aryteno-epiglottidean ligaments. When it is practicable, scarification of these ligaments has been recommended."

Prof. T. admits he has not had the courage to undertake this operation, notwithstanding the strong testimony furnished by Dr. Gurdon Buck as to its utility. Indeed he questions both the utility and facility of the operation, and gives it as his opinion that most of the cases reported by Dr. Buck would have recovered under simpler treatment; that, in fact, they "were acute non-symptomatic cases of œdema of the glottis, an affection which corresponds in the adult to false croup in the child, and which gets well of itself notwithstanding the very alarming aspect of the symptoms." "Whatever may be the nature of the disease, whatever may be the laryngeal lesion which has induced the œdema of the glottis, the first thing to do is to apply topical treatment." Water-spray strongly charged with tannin is the local remedy which Prof. T. prefers, and he esteems it "even more serviceable in chronic affections of the larynx, than in œdema of the glottis." After this he recommends "insufflation of tannin and alum, cauterization with nitrate of silver, and (when practicable) scarification of the aryteno-epiglottidean folds." These failing, he resorts to tracheotomy.

Aphonia. The treatment which Prof. T. here advises in this affection is more especially applicable to certain chronic cases, and almost exclusively to such as are not dependent on

any serious lesion of the phonetic apparatus. In this class of cases our author has had "wonderful success" from cauterization of the upper part of the larynx with the saturated solution of the sulphate of copper, "or a solution of nitrate of silver in the proportion of one part of the salt to five of water (by weight)," applied by means of the sponge probang. He sometimes substitutes the tincture of iodine for the sulphate of copper.

Where the aphonia is coincident with chronic follicular pharyngitis, it is probable "that the inflammation extends from the pharynx to the mucous membrane of the larynx;" and as such cases usually coëxist with the herpetic diathesis they are particularly obstinate. Here arsenical fumigations, followed at a later stage by cauterization with the copper, are, we are told, generally sufficient to effect permanent cure. The arsenical cigarettes used by Prof. T. are made as follows: "Take of arseniate of potash fifteen grains; distilled water, fifteen fluid drachms; evaporate this solution upon a sheet of white paper which does not contain any glue. Having dried the paper make it in twenty cigarettes. Every morning the patient ought slowly to inhale into the bronchi from eight to ten whiffs of the smoke of one of these cigarettes;" and after the patient seems to be restored he resorts to the cigarettes "on eight continuous days, once a month, with a view to prevent a relapse." He does not allude to electricity in aphonia.

"The efficacy of the treatment, and the rapid manner in which recovery takes place under it, seem to occur exactly in proportion to the superficiality of the inflammation, if one may be allowed to employ so incorrect an expression. In aphonia supervening as the sequel of a moral emotion, or as the result of abrupt stoppage of the menses, as well as in aphonia occuring during pregnancy or after delivery, one or two cauterizations generally suffice."

Dilatation of the bronchi and bronchorrhea. Concerning the latter condition our author remarks that whatever its species,

whether it depend on influenza or on morbillous catarrh, herpetic or other catarrh, we will derive real benefit from the same medicines which are appropriate in urethral blennorrhagia." At the head of these he places balsam of copaiba and essence of turpentine. They are contraindicated in pulmonary as in urethral blennorrhagia during the inflammatory stage.

Prof. T. employs concurrently with the foregoing treatment that by inhalation of medicinal substances, which he considers "bears the same therapeutic relation to pulmonary blennorrhagia that stimulating injections bear to blennorrhagia of the genito-urinary organs." The patient may either inhale air impregnated with balsamic vapors or (what is a more effectual method) substances atomized by the spray apparatus. "Great relief is sometimes obtained by smoking cigarettes of arseniated or nitrated paper."

Hemoptysis. In pneumorrhagia or parenchymatous hemorrhage from the lung, which is almost always connected with disease of the heart, Prof. T. practices very moderate bleedings, and gives digitalis in full doses, acids, and ratanhy. "When parenchymatous hemorrhage is obstinately recurrent, ipecacuanha is a remedy which seldom fails." But here it is given in small quantities, emetic doses being reserved for what our author calls bronchial hemorrhage, in which affection he administers the ipecac to full emesis.

"Nevertheles [Prof. T. remarks] the hand trembles when it administers this remedy for the first time in the treatment of hemoptysis. We are accustomed to prescribe the greatest possible quietude to our hemoptoic patients: we counsel them to keep absolute silence; we tell them to restrain the slightest effort to cough; the very most we allow them to do is to breathe; and so frightened are we for congestion, even passive congestion of the lung, that we act as if we placed them in peril by permitting them to make the slightest effort. Yet here we are giving a medicine which produces vomiting, during which the face swells, the blood stagnates in the

veins by which it is being conveyed to the auricles; and consequently the pulmonary veins become distended. One might expect that such treatment would cause the hemoptysis to return in a much more profuse degree; but in place of this it is stopped in nearly every case. Here is one proof more of the small reliance to be placed on theoretical explanations, and of the value of empirical facts, without which indeed therapeutics would be a nullity."

Gangrene of the lung, when seated in the pulmonary parenchyma, is nearly always incurable. When it involves the extremities of the minute bronchial ramifications it is a milder affection and more amenable to treatment. "The cures have generally been obtained by pulmonary atmiatria." The substances used for the purpose are "essence of turpentine, the essential oils of cubebs and copaiba, tannin, solutions of extract of ratanhy, of sulphate of copper, of corrosive sublimate, of arseniate of soda—powerful modifiers, which when introduced into the bronchial tubes act upon the diseased surfaces in a manner wonderfully conducive to recovery. At first the solutions used must be exceedingly weak, and their strength be slowly increased in proportion to the increased tolerance of the economy."

TO BE CONTINUED.

Clinic of the Month.

SYPHILIZATION.—Prof. F. J. Bumstead, M. D., in reply to the question, Is syphilization to be recommended for general adoption, answers: "From what I have personally witnessed, and from the accounts of others, I believe that it is a very effective method for the treatment of syphilis. I can not say that I am fully convinced of the very small number of relapses after 'syphilization' alleged by its advocates; not that I for a moment doubt their honesty, but results so favorable as this should be confirmed by others less enthusiastic and less interested before demanding implicit belief. From what I have seen of the practice, nothing less than a very strong probability, in case I myself had syphilis, that the disease, if left alone, or if treated by mercury, would terminate disastrously, could induce me to undergo the personal discomfort, and for the length of time, which I have witnessed in the patients at Charity Hospital. This *debit* side of the account, I can not believe, is fully appreciated by the advocates of 'syphilization' in their enthusiasm for the *credit*. The former, in fact, is apparently not regarded by them as deserving of mention. Upon inquiry of Prof. Boeck, I am told that this plan of treatment is usually carried on without any interference with the patient's ordinary avocations; that the inconvenience is even so slight that a husband or a wife who has gone astray and contracted syphilis may undergo this series of repeated inoculations extending over a period of three or four months, and yet be able to pass off the resulting pustules and ulcerations, covering the chest, arms, and thighs, as common 'boils!' What I have seen of 'syphiliza-

tion,' as practiced by Prof. Boeck himself, would make it appear a less agreeable process than the above statement would imply. To be sure, the treatment was new at Charity Hospital, and the patients were probably aware of the fact and more or less suspicious. Yet they kept their beds during the greater part of the three or four months that the inoculations were going on, although they had every inducement to be up and out upon the grounds; and it often required all our powers of persuasion to lead them to consent to a continuance of the inoculations, so great was their discontent. Indeed I never made a visit to the hospital without the fear that some of them had eloped, as actually happened in three instances. They represented that the soreness of the ulcerations was so great that they could scarcely endure the contact of the bedclothes, much less that of their daily dress, and the appearance of the sores corroborated their statement. I can not well imagine how persons in their condition could have been about attending to their daily business. When they left the hospital they bore scars over the chest, arms, and thighs, which they will doubtless carry with them to their graves. Moreover, the serious tendency of an ulcer upon the thigh, in one case, to take on phagedenic action shows that this practice is not devoid of danger. In short, I feel obliged to subscribe to the opinion expressed by Messrs. Lane and Gascoyen, that 'syphilization is not a treatment which can be recommended for adoption.'" (Amer. Jour. Med. Sciences.)

NEURALGIA OF THE JAW-BONES.— Professor Gross says: "There is a form of neuralgia of the jaw-bones which, as far as my information extends, has not hitherto been described. Its seat is in the remnants of the alveolar process of edentulous persons, or in the alveolar structure, and in the overlying gum, and is met with chiefly, if not exclusively, in elderly subjects. It is more common in the upper than in the lower jaw. The part affected is usually very small, often not

exceeding a few lines in extent. The soft tissues around do not seem to suffer, at least not in the same degree; on the contrary, the morbid action is generally limited to the osseous structure. In rare instances there may possibly be some involvement of the gum, which is nearly always exceedingly hard and dense, grating more or less under the knife, and adhering with extraordinary firmness to the atrophied alveolar process beneath. The pain is generally paroxysmal, coming on in fits and starts, very much as in ordinary neuralgia, the slightest causes being sufficient to provoke it, as talking, mastication, the contact of hot or cold fluids, deglutition, or mental excitement. Sometimes it is momentary, coming and going with the rapidity of lightning; occasionally it lasts for hours together; and cases occur, although they are rare, in which it continues, with but little mitigation, for an indefinite period. The pain varies in character; thus it may be sharp and darting, dull, heavy, aching, boring, or gnawing. Pressure generally relieves rather than aggravates it. Now and then, when it is uncommonly severe, there may be more or less spasm of the muscles of the face, but this is rare. The pathology of the affection seems to be compression of the minute nerves distributed through the wasted alveolar process, dependent upon the encroachment of osseous matter upon the walls of the canals in which they are naturally inclosed. The disease usually comes on gradually, and proceeds from bad to worse until, in many cases, the suffering is rendered nearly intolerable. The only effectual remedy is excision of the affected alveolar process. No particular attention need be bestowed upon the after-treatment. A mild course of chalybeate tonics may be required when the patient is anæmic, or affected with flatulence and indigestion." *(Ibid.)*

The Pedicle and its treatment in Ovariotomy.—M. Tixier says experience and observation enable a diagnosis

in certain cases of the probable length and variety of the pedicle. Such knowledge, obtained from certain objective and subjective signs, is valuable, since upon the length of the pedicle the success of the operation often depends. Three varieties can be diagnosed with considerable certainty: viz., long, short, and twisted.

Long Pedicle. The abdominal form is peculiar; it is that called wallet-shaped. The subumbilical part of the abdominal wall lies upon the internal face of the thighs; and the ovarian tumor, strongly projecting in front, does not seem in immediate relation with the superior strait. Vaginal touch makes known elevation of the neck, and the index finger encounters no tumor in the pelvic cavity. The uterus has great mobility, and can be readily displaced. The combination of these signs renders very probable an elongation of the broad ligament and of the fallopian tube—a condition favorable for fixing the pedicle externally.

Short Pedicle. A short pedicle may be presumed from the following signs: first, the form of the abdomen differs from the preceding; sometimes there is observed a lateral enlargement without pronounced projection of the median part. In endeavoring to press externally the ends of the fingers between the tumor and the pubes, the tumor is found to extend into the pelvic cavity, its base appearing to rest upon the superior strait. Vaginal touch shows descent of the neck, and more or less immobility of the uterus. By subsequent explorations with the finger of the pelvic cavity, we learn that it is occupied with certain portions of the tumor.

Twisted Pedicle. A twisted pedicle we conclude exists from the following symptoms: the patient experiences very acute pains, irradiating below in the vein corresponding to the affected ovary, and above in the lumbar region of the same side. They are excited by work, fatigue; especially do they suddenly appear when the patient is lying down and changes her position. There is also observed in these

patients uterine cramps analogous to those caused by ligature of the pedicle. The cystic liquid is always more or less dark, presenting a hemorrhagic color. Touch gives no positive information in these cases; but when a pedicle is twisted we know that it is long and small. *(Archives Générales.)*

Milk as a Prophylactic against Lead Affections.—M. Didierjean observed in works for the manufacture of red lead the great liability of the laborers to become poisoned, and this notwithstanding suitable hygienic care, bathing, etc., and the use of sulphuric acid lemonade. About the close of 1867 his attention was directed to two of the employees who, though a long time engaged in the works, had never been sick; upon inquiry he found they were in the habit of taking milk at their meals. Commencing February, 1868, all the laborers were required to use milk similarly, and in a short time they recognized the good effects of this drink. Not a single one in more than eighteen months has suffered from lead-poisoning. *(Ibid.)*

The Sewing-machine on Health.—M. Decaisne asserts, among other things, that "a rigorous investigation has demonstrated that females engaged in working the sewing-machines are not more subject than other laboring women to metrorrhagia, miscarriage, leucorrhœa, and peritonitis; and that the facts which have been adduced in favor of such a view were simple coincidences, and the result of excessive labor. *(Ibid.)*

Hereditary Tendency in Tuberculosis.—Sir William Jenner, in some clinical remarks at the University College Hospital, stated that he believed, with regard to children both of whose parents are tubercular, the morbid tendency is not only transmitted to them, but intensified in them to a degree exceeding the sum of the tendencies of the parents; and that the intensifying of the tendency, under these circumstances,

occurs equally in cases of insanity and of nervous disease in general. On this ground he objected to intermarriage, few families being free from a tendency to some disease; therefore if two members of the same family became married the tendency latent in them would be intensified in their offspring to an enormous degree. He was also satisfied, from his observations at the Ormond-street Hospital for children, that the father transmits the tendency with greater certainty than the mother, when one parent only is affected. (Lancet.)

A NEW VESICANT.—In a recent number of the *Journal de Chimie Médicale*, M. Delpech calls attention to the defects of the ordinary preparations of cantharides; the proportion of the active agent or cantharidin varying, the presence of fatty or oily substances sometimes causing the absorption of a dangerous poison, and the resin of turpentine employed in the composition of the plaster being an unnecessary irritant. In place of this he recommends the cantharidinate of potash, which is of a very stable composition, has no odor, and possesses a vesicant action in a high degree. He recommends, as the best formula for the plaster, gelatin, 2.09 parts; water, 10 parts; alcohol, 10 parts; cantharidinate of potash, 0.20; glycerine, 9.5 parts. The mass should be equally spread on thin gutta-percha, a definite quantity being present in each square inch. *(Ibid.)*

PAIN AFTER OPERATIONS.—The narcotic effects of chloroform or ether destroy pain during operations, but many patients suffer severely after the narcotism has gone off. To prevent this, Professor Sédillot, of Strasburg, proposes to divide the tissues with the platinum wire brought to a white heat by the galvanic current. This division should be effected very slowly, so as to prevent hemorrhage. The author states that no pain is felt on awaking; that the wounds heal extremely well; and that hospital complications do not occur. *(Ibid.)*

HYDRATE OF CHLORAL.—Dr. John B. Tuke says the advantages possessed by chloral over all other hypnotics are: 1. That it is more uniformly certain in its action; 2. That it has no depressing influence; 3. That it does not cause constipation; 4. That it does not produce nausea; 5. That its effects are more lasting. He believes that it is the most valuable means of producing sleep which has been introduced into the pharmacopœia of the asylum physician. The only difficulty is to ascertain the exact dose for each case; but this is obviated by beginning with half-drachm doses, and increasing them by ten grains until the limit is found. *(Ibid.)*

SCARLATINA.—Dr. H. S. Purdon, of Belfast, the worthy successor of Mr. Wilson in the Journal of Cutaneous Medicine, has derived much benefit in scarlet fever from the old remedy, chlorate of potash, given with diluted hydrochloric acid, the latter being extremely serviceable when acute catarrh of the stomach complicates the disease, as it dissolves the tenacious alkaline mucus, coating the walls of that organ, thus allowing nourishment to be absorbed. (Amer. Journal Syphilography and Dermatology.)

TINEA.—No skin diseases are more annoying than those designated by the name of "ringworms." In tinea circinata and tonsurans, one or two applications of a solution of chromic acid (one drachm to the ounce of water) has in the writer's hands proved very efficacious in curing the disease. Sometimes liquor potassæ painted over the affected part answers very well, or a solution of carbolic acid, which remedy checks the development of spores, and also prevents them from germinating. (*Ibid.*)

SCROFULODERMA.—The acetate of soda, eight grains to the ounce, has been recommended by Dr. M'Call Anderson, of Glasgow, as an application in strumous affections, but in

the writer's hands has been found to be inferior to the iodide of lead ointment. A popular country remedy is an alcoholic solution of walnut leaves. The injection of tincture of iodine, four to eight drops, into glandular enlargements has been lately recommended, and has been tried in several cases at the Belfast Hospital for Diseases of the Skin. An ordinary hypodermic injection syringe answers very well. Care must be taken to avoid any of the superficial veins. After a few injections the glandular swellings become hardened and rapidly absorbed. Sometimes symptoms of iodism are exhibited, when the remedy must be discontinued for a short time. *(Ibid.)*

PHTHEIRIASIS.—A good cleanly remedy for pediculi wherever situated is a lotion containing the yellow oil of sandalwood, suspended by means of glycerine and rectified spirit. This essential oil has a powerful odor, which destroys the insects. *(Ibid.)*

ULCERATION OF SEPTUM NASI.—Pereira recommended an ointment containing one drachm of the nitrate of bismuth to the ounce of lard as a local application in this disease. A short time since an interesting case of ulceration of septum nasi was cured by the use of this ointment, after nitrate of silver, tannin and glycerine, etc., had failed. *(Ibid.)*

SULPHURIC ETHER IN EPIDIDYMITIS.—A. Assadorian, M. D., Resident Surgeon to Charity Hospital, New York, reports that he has seen several cases of acute epididymitis relieved in two or three days by the application of sulphuric ether to the inflamed organ. His plan is to elevate the bedclothes by a basket-work or hoop, so as to favor free evaporation. The testicles being elevated by oakum, a piece of lint is wet with the ether and laid over the inflamed testicle and cord, and kept *constantly* wet. It is necessary to direct the patient to make the application regularly, as the cure is retarded if the

application is not continuous. The usual quantity of ether required is about three bottles of Squibb's ether fortior. (*Ib.*)

Condensed Milk. — Mr. L. Kofler has analyzed several samples of condensed milk which were manufactured in Switzerland by German and English companies. They were all found to be the genuine article, concentrated by evaporation, and were made durable by the addition of pulverized sugar. (Druggist's Circular.)

To Remove Rust from Surgical Instruments. — Red rust may be formed on the polished surface a thousand times without materially corroding the metal, provided it be removed soon after it has formed. To remove red rust cover the rusty portion with common olive-oil, and rub it in well with a woolen cloth. After it has stood a few hours, rub the parts with finely pulverized slaked lime, or Spanish whiting, until the rust is all removed. If red rust is allowed to accumulate until the polished surface is corroded, sweet-oil and a severe rubbing will seldom remove it. The entire surface must be repolished with emery, or some other grit, before black rust will disappear from polished steel or any other metal. *(Ibid.)*

Test for Calomel.—Put a little of the suspected calomel on a clean knife-blade, moisten with alcohol, and rub with a cork. Pure calomel does not attack the steel; but corrosive sublimate, or calomel contaminated with the sublimate, produces black spots. *(Ibid.)*

Removal of Nitrate of Silver Stains from Woven Tissues.—Chloride of copper completely removes, even from colored woven cotton tissues, stains occasioned by nitrate of silver; the tissue is to be afterward washed with a solution of hyposulphite of soda, and next thoroughly washed with water. From white cotton and linen tissues nitrate of silver

stains are more readily and effectually removed by applying dilute solution of permanganate of potassa and hydrochloric acid, followed by washing with hyposulphite of soda solution, and rinsing in plenty of fresh water. By these means the use of the highly poisonous cyanide of potassium is rendered unnecessary. *(Ibid.)*

Test for Arsenic.—A new and very delicate test for arsenic has been discovered by Bettendorff. Its sensibility is so great that it is said to be capable of detecting one part of arsenic in a million parts of solution; and the presence of antimony does not affect it. In order to apply this test, the arsenious or arsenic liquid is mixed with aqueous hydric-chloride (hydrochloric acid) until fumes are apparent; thereupon stannous chloride is added, which produces a basic precipitate, containing the greater part of the arsenic as metal, mixed with stannic oxide. *(Ibid.)*

Hemorrhoids.—Suppositories containing one-tenth of iodoform are used by Hillairet against indurated hemorrhoids. In a short time the tumors soften and wither away. (*Ibid.*)

Cure for Obesity.—Dr. Gibb, of London, recommends the use of bromide of ammonium to those who suffer from excess of fat. When taken in small doses it will absorb fat, and diminish the weight of the body with greater certainty than any other known remedy. (Canada Medical Journal.)

Neuralgic Pill.—Dr. T. C. Osborn says that the subjoined combination is very effectual in cases of neuralgia: zinci cyanuretum, gr. vj; quinæ sulphas, gr. ix; morphiæ sulphas, gr. iss; ext. belladonnæ, gr. iij; Ft. pilulæ, No. vj. S. One pill every six hours, until the pain is relieved. (New Orleans Journal of Medicine.)

Notes and Queries.

WABASH VALLEY ESCULAPIAN SOCIETY.—We are indebted to Dr. W. E. Henry, of Mattoon, Ill., for a report of the proceedings of the above body, from which we make the following brief extracts.

Dr. Willens reports a case of crural hernia of ten years in a patient thirty-nine years of age, the mother of five children. Hernia became strangulated on July 1, 1869; tumor the size of a large hen egg; operation on the 7th, and radical cure resulted. The same writer gives an account of pelvic abscess in a patient twenty-seven years of age, mother of two children; her ill health dating from a miscarriage of four months, three years previous to the reporter's having charge of the case. The patient was very much broken down; had night-sweats, etc.; pain in the lower part of the abdomen and constipation. Abdominal examination discovered a tumor as large as an infant's head, extending three inches above the pubes, painful, fluctuating, and slightly movable; vaginal, uterus lower than normal, cervix directed to the right, fluctuation in the cul-de-sac;* rectal, tumor and fluctuation distinct. The tumor was opened through the vaginal wall by a small trocar; a quantity of light-colored, inodorous pus discharged; the sac was washed out with carbolized water, narcotic poultices applied to the abdomen, appropriate constitutional treatment instituted, and in a few months the patient was well. The opening per vaginam in such cases is preferable to one by the rectum or by the abdominal walls.

Dr. Chambers, of Charleston, Ill., reported a case of dislocation of the last dorsal vertebra, in a robust farmer, caused

* Which cul-de-sac the reporter does not mention—an omission that we regret.—T. P.

by his being caught, when driving into his barn with a load of door-frames, between the load and the lintel. Not only was the lower dorsal vertebra dislocated, but the spinous processes of two or three vertebræ above, and one of the ribs fractured; the inferior extremities were paralyzed. The luxation was reduced under chloroform. Morphia was first given; in a few days, bromide of potassium in large doses; in six weeks, strychnia, now replaced by tincture of nux vomica; then the electric battery was used. Nearly a year after the injury the patient's condition is as follows: general state good; can partially flex and extend left leg, slight motion in right; temperature normal in each leg, and both diminished in size; conscious generally when it is necessary to urinate or defecate, but can not control the sphincters; has had partial erections; appetite good; tongue clean; skin soft and warm; pulse when sitting up eighty, and when lying down seventy-eight. The case is one of peculiar interest, as it is, according to Dr. Chambers, the third reported.

Cholera Infantum.—A distinguished contributor writes from New York: "I have read the article by Dr. L. P. Yandell on cholera infantum, in your August number, with great interest. It should be published as a popular tract, and left at every house where there are children. It is not enough to write on this subject for the edification of physicians. . . . But the main object of this letter is to invite your attention to the use of strychnia in these cases. Turpentine also I consider only a little less valuable, while creosote is often essential to relieve vomiting. I think you will find too that thirst is often best relieved and refrigeration produced by cold enemata, as in fever. All along the Mississippi River, and also here in New York, periodicity is a very common complication. In the matter of diet, it is worthy of remark that in Louisiana and other southern states sweet potatoes are highly esteemed, but in my opinion the gluten of flour is often better."

THE SUBCUTANEOUS ASPIRATOR.—This instrument, so well described by Dr. Weist in the August number of the Practitioner, is now being made and is on sale by Otto & Reynders, of New York City. The inventor, Dr. Dieulafoy, has patented it; and, to cap the climax, Liebreich has secured a patent for the hydrate of chloral, not only on the continent, but in England. What will the Section on Ethics do with these benighted Europeans, as your able cotemporary of the Medical Gazette calls them? They certainly ought to be disciplined—indeed they must be.—R. T.

PROF. ALPHEUS B. CROSBY, M. D., of the University of Michigan, has accepted the chair of surgery in the Long Island College Hospital. He carries to his new field a ripe experience as teacher and practitioner, while his many excellent personal traits entitle him to high social consideration.

CORRECTION.—The article entitled *Notes on Medicine in China*, and credited to the Rev. Dr. Martin, of the University of Pekin, published in the April number of the Practitioner, was from the pen of Dr. John Dudgeon. The error in reference to the authorship arose from the fact that a note of introduction from Prof. Martin, which should have accompanied the manuscript, was mislaid or lost; and the *address* being in the familiar penmanship of an old friend, the paper was attributed to him. Dr. Dudgeon, whose Hospital Report we have noticed elsewhere, has investigated more thoroughly than any one living the various subjects connected with medical practice in China; by his superior professional abilities and self-denying labors he is accomplishing a most important work among the Chinese. This error corrected—and its correction justice both to Dr. Martin and Dr. Dudgeon required—we hope that each will be known to our readers in future numbers of the American Practitioner.—T. P.

TO THE READERS OF THE AMERICAN PRACTITIONER.

The subject of tetanus, being recently revived by the introduction of the Calabar bean and the hydrate of chloral, and receiving now general attention, we desire to obtain trustworthy data concerning it. The published record of this disease is wanting in so many particulars that few points connected with it can be positively decided. It is believed that if the unpublished experience of the readers of the Practitioner can be obtained, a sufficient number of cases can be gathered to correct to a great extent the present imperfect statistics of this interesting malady. Your coöperation is earnestly desired to this end. Responses have been so prompt and satisfactory in the few instances where this information has been asked, a hope is indulged that before the coming spring, when the subject will be reöpened in these pages, the reports of many hundred cases will have been accumulated from reliable sources.

While not wishing to instruct as to the manner of reporting cases, attention is asked to the subjoined form, as one which will facilitate tabulation. Brief replies to as many of the questions as can be answered are desired, especially in fatal cases.

1. *Age*, *sex*, constitution, *color*, and occupation of patient.

2. *Idiopathic*, *traumatic*, or puerperal. If traumatic, situation and character of injury, and condition of wound when tetanic symptoms were developed.

3. Season, temperature, and hygienic surroundings of patient.

4. *Time which elapsed after receipt of injury before development of tetanic symptoms.*

5. Muscles involved; the order and degree of their attack.

6. Pulse; temperature; seat and character of pain.

7. *Treatment.* Doses of drugs, method of administration, and *apparent effects of remedies.*

8. Duration of symptoms, and result; if fatal, the mode of dying.

9. Other noteworthy facts.

D. W. Y.